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APPLICATION NUMBER: *60/418,421*
FILING DATE: *October 15, 2002*
RELATED PCT APPLICATION NUMBER: *PCT/US03/32630*

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Docket Number	KIM-001

PROVISIONAL APPLICATION FOR PATENT COVER SHEET (Small Entity)

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

INVENTOR(S)/APPLICANT(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Thomas S.	KIM	Naperville, Illinois

☐ *Additional inventors are being named on page 2 attached hereto*

TITLE OF THE INVENTION (280 characters max)

AN IMPROVED CUP LID FOR DRINKING HOT FLUIDS

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ENCLOSED APPLICATION PARTS *(check all that apply)*

☒ Specification — *Number of Pages* 15 — ☐ Small Entity Statement

☒ Drawing(s) — *Number of Sheets* 1 (in trip) — ☒ Other (specify) Postcard Certificate of Express Mail

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Respectfully submitted,

SIGNATURE _____ Date 10/15/2002

TYPED or PRINTED NAME Thomas S. Kim REGISTRATION NO. *(if appropriate)* 51,009

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P19SMALL/REV04

jc784 U.S. PTO 10/15/02

jc996 U.S. PTO 60/418421 10/15/02

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Thomas S. Kim

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FILING DATE: Herewith

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An Improved Cup Lid for Drinking Hot Fluids

Field of Invention

The present invention relates to lids used to cap and seal an assortment of cups and containers in order to provide a focused point for dispensing any fluid contained therein for drinking.

Background

An array of various lids are currently available to cap and seal cups and containers. Some lids are useful for capping a cup to prevent the escape of fluid contained therein, in other words the lids are spillproof. Other lids are also spillproof but, at the same time, enable fluid to be dispensed for consumption. Usually fluids are dispensed through a small opening near the rim of the lid upon tipping the bottom of the cup away from the user, which tips the opening towards the user's mouth and directs fluid toward and through the opening. In some lids the top surface of the lid has a perforated opening with a tab. An opening is then formed when the user pulls the tab, which will create an opening as the section defined by the perforation is removed.

While many of the lids provide adequate seals to prevent unwanted spillage of fluids, there still remains a problem with the delivery of hot fluids for drinking. The problem that exists with hot fluids is that often the user desires to drink the fluid while hot or the user is in a rush to drink the hot fluid and the result is the inability to allow for timely cooling. Typically the cups for containing hot fluids are thermoresistant and require extensive time before cooling to a comfortable temperature occurs. Therefore, currently available lids allow for containment and dispensing of fluids while limiting

spillage, but fail to prevent harmful and painful scalding of the users mouth, particularly the lips and tongue, when drinking hot fluids in a timely manner.

One prior art device attempts to solve this problem related to drinking hot fluids. US Patent No. 6,176,390 describes a container lid for covering a cup with a reservoir built into the lid. The reservoir is a small well residing within the top surface of the lid and includes a small opening along the side of the well, which allows for entry of fluid into the reservoir upon tipping the cup upward. The small amount of fluid in the reservoir, which is now separate from the bulk fluid, is able to cool down quicker and allow for quicker drinking without risk of scalding. The lid also has a typical tab built into the other end of the lid, approximately 180° from the reservoir. This tab can be pulled and removed along provided perforations in order to create a direct opening into the interior of the cup. This provides a solution to the problem of drinking hot fluids but presents other problems. One problem is risk of spillage of the fluid in the reservoir. There is no spillproof containment of fluid upon entering the reservoir. Another problem is the difficulty presented by the act of tipping the cup and lid over to allow fluid to flow into the reservoir. There is nothing to prevent overflow, which will cause unwanted spillage. A further problem is that the reservoir can only hold a small amount of liquid, which is not a practical or desirable way to drink fluids.

A great need still remains for a lid that can seal a cup and prevent unwanted spillage and, at the same time, can provide an improved way to cool down hot fluids for drinking soon after it is dispensed into the cup without overly cooling the bulk liquid. A further need that remains is a lid that can cool portions of hot fluids in sizeable quantities that are ideal for drinking.

Summary of the Invention

The disclosed methods and apparatuses generally address the needs discussed above. In particular the methods and apparatuses disclosed below provide a better way of drinking hot fluids by reducing the risk of burning or scalding by the hot fluid while still allowing consumption of the desired, hot but not scalding, fluid. Hot fluids include coffee, hot cocoa, tea, soup, and other fluids that are typically consumed while hot. This is accomplished by allowing the user to periodically separate out a portion of the hot bulk fluid so that the portion can be cooled to a "drinkable temperature". A "drinkable temperature" refers to a temperature below that which normally causes the skin or tongue to scald. The scalding temperature is commonly known to those in the medical field.

An aspect of the present invention provides a container lid that can store a portion of a bulk fluid in a reservoir present within the container lid for subsequent consumption. The bulk fluid is directed into the reservoir by a variety of methods to allow the portion of bulk fluid to cool more rapidly than the bulk fluid remaining in the container. The method for directing bulk fluid into the reservoir includes mechanically tipping the container, forcing liquid using air press, mechanically drawing water via an extensible ladle, or other mechanically or pneumatic means. Preferably, the bulk fluid is directed into the reservoir by tipping the cup so that a portion of bulk fluid flows into and is held in the reservoir for increased cooling. The increased cooling in the reservoir is partly due to a greater surface area to volume ratio, which causes more heat to escape per volume of the portion in the reservoir relative to the bulk fluid. Furthermore, the container holding the bulk fluid is usually somewhat thermoresistant to prevent rapid heat loss, while the

container lid does not have the same thermoresistant properties; therefore, this difference in thermoresistance further allows the portion in the reservoir to cool more rapidly than the bulk fluid in the container. After the portion of bulk fluid is allowed to cool to a drinkable temperature, the portion of bulk fluid is dispensed from the reservoir through an opening or spout on the outer surface of the lid for drinking.

One preferred aspect of the present invention includes a container lid comprised of two parts, a base that physically connects to the container and a top that physically connects to the base in a removable manner, the top and base defining an empty space or reservoir. The physical connections between base and container and top and base are all "spillproof" connections. "Spillproof" is used herein to refer to a connection that generally prevents the unwanted escape of fluid, or spillage of fluid. This spillproof connections allows fluid to flow into the reservoir and out the top without spilling, i.e., the fluid only escapes the container-container lid combination through an outer spout located on the top. The spillproof connections can be accomplished by threads, ridges or grooves that interact between elements. Generally, a number of these spillproof connections are generally well known in the art. In this aspect, once the bulk fluid has cooled to a drinkable temperature, the removable top can be removed and the bulk fluid can be dispensed through an inner spout located on the top of the base. The bulk fluid, now cooled to a drinkable temperature, is dispensed directly to the user for drinking through the base.

In an alternative preferred aspect of the present invention, the container lid is essentially one part. This embodiment is contemplated for a reusable lid. The base and top are semi-permanently connected so that the top can be removed periodically for

washing the lid. The semi-permanent connection includes a top that snaps onto the base in a rotatable manner and can include a locking mechanism. A locking mechanism can include a key-fit assembly, depressed cap system, or a thread system with interfering flanges, which require squeezing the cap while unscrewing, all of which are similar to many pill containers. This connection is much more secure than the lid comprised of a removable top and is more suited for a nondisposable cup plus lid system. In this aspect, an outer spout on the top and an inner spout on the base are situated about 180° from each other so that a portion bulk fluid can be directed into the reservoir through the inner spout without spilling out the top. Thereafter, the portion of bulk fluid can be dispensed out the outer spout without flowing back into the container with the rest of the bulk fluid. Once the bulk fluid has cooled to a drinkable temperature, the inner spout and outer spout is rotated so that they are directly on top of one another in a fitted manner, which is preferably a spill proof connection. In this position, the bulk fluid can be directly dispensed through the lid in one motion so that the user can drink the bulk fluid directly without holding some portion in the reservoir.

In a preferred aspect of the present invention, the base has a raised inner spout for fluid to escape the container and enter the reservoir of the container lid. The inner spout is located near a radial edge of the base. Positioned adjacent and radially inward from the inner spout is a slope is a sloping section of the base that extends from the top of the inner spout on one side and slopes downward to a level near the top of the container. The slope of the base ends on the opposite side of the inner spout at a generally level area of the base. The slope assists a portion of the bulk fluid that has entered the reservoir to the lower area or well of the reservoir for collecting.

In another aspect of the present invention, the top has an outer spout for dispensing fluid from the reservoir. Preferably, the outer spout is raised to make drinking easier. The raised outer spout allows a user to locate the outer spout with the user's mouth without looking at the container lid. Also, the raised outer spout is better shaped to fit in a user's mouth. In a more preferred embodiment, the top has a lip adjacent to and radially outward from the outer spout. This lip prevent excess fluid not consumed from spilling over the edge of the top, most likely redirecting the fluid back down the outer spout. More preferably, the top has an outer trough adjacent to and radially inward from the outer spout. This outer trough catches any excess fluid that is not consumed and does not flow back into the lid through the outer spout.

In another preferred aspect, the lid has a top including a dome that creates greater volume in the reservoir. The dome can be any raised area of the top of any shape but preferably it is shaped somewhat hemispherically. The extra volume created by the dome allows larger portions of the bulk fluid to be stored and cooled for rapid drinking.

In another preferred aspect, the lid is further comprised of a material that indicates temperature. This material can include any of the generally known material that is sensitive to temperature changes, e.g., the temperature-sensitive material that is a part of a thermometer or the one used in some children's toys. The material can be specifically selected so that the color change used to indicate temperature change actually indicates a reduction in temperature to a level that is less than scalding. The material preferably is comprised of an organic compound that is characterized by a melting point at the bottom (or lower temperature) end of the temperature range for scalding fluids.

Another aspect of the present invention is a method of cooling a portion of bulk fluid comprising directing bulk liquid held in the container into a reservoir by first tipping the container with the container lid away from a user while the user has the outer spout facing the user. This first tipping action causes bulk fluid to flow through the inner spout into the reservoir. After tipping, the container is place upright which allows a portion of the bulk fluid to stay in the reservoir while some of the bulk fluid flows back into the container through the inner spout. All this occurs without bulk fluid escaping the top through the outer spout. After the portion of the bulk fluid remains in the reservoir, the portion of bulk fluid is allowed to cool over a relatively short period of time bringing the temperature of the portion of bulk fluid to a drinkable temperature. A relatively short period of time refers to a period of time that is much shorter than the time required to allow the bulk fluid to cool within the container and generally allows enough heat to dissipate so that the portion of bulk fluid can be consumed with scalding or burning the user. Preferably, the relatively short period of time will be under 2-3 minutes, and more preferably, under one minute. Of course, the time for cooling is directly dependent upon the characteristics of the container and lid, the temperature of the bulk fluid, and the temperature of the atmosphere. The above time frames are typical for common disposable containers and lids and bulk fluids at scalding temperatures in a room temperature environment.

The lid is generally produced from plastic or polymeric material that are well known in the art. Preferably, the lid is produced from plastic or a plastic-like material that is inexpensive, and preferably does not have thermoresistant characteristics.

After the portion of bulk fluid is allowed to cool over a relatively short period of time, the portion of bulk fluid is dispensed for drinking by the user by a second tipping of the container. The second tipping tips the container towards the user with the outer spout facing the user. This causes the portion of bulk fluid to dispense out the outer spout and into the user's mouth for consumption.

The aforementioned aspects of the present invention and other aspects of the present invention will be understood by one of ordinary skill by reviewing the drawings and detailed description provided below.

Brief Description of the Drawings

Fig. 1 is a plan view of a container with a container lid attached.

Fig. 2 is a magnified vertical cross-sectional view of container lid attached to top of container.

Fig. 3 is a plan view of container lid attached to top of container with top removed.

Fig. 4 is a perspective view of container lid.

Fig. 5 is a top view of container lid.

Fig. 6 is a vertical cross-sectional view of an alternative embodiment having a semi-permanent connection between the top and base.

Detailed Description of the Invention

An embodiment of the invention is provided in Fig. 1. The figure shows a lid 1 for capping a container to control spillage and direct outflow of fluid housed in the

container. Fig. 4 and Fig. 5 show the lid from two different views, perspective and top, respectively.

Fig. 2 shows a preferred embodiment comprised of a lid 1 physically connected to a container. The lid 1 is comprised of a base 10 that caps, and physically connects to, the open end of the container, and a top 20 that caps, and physically connects to, the base 10 to form a reservoir 12. The reservoir 12 is able to collect a portion of the bulk fluid separate from the remaining bulk fluid within the container. The portion of the bulk fluid held in the reservoir 12 is physically separate from the rest of the bulk fluid which remains in the container and typically cools faster than the bulk liquid, particularly when the container has been recently filled with a hot liquid, due to the increased surface to volume ratio and reduced thermal protection, relative to the container. In particular, the portion of bulk fluid in the reservoir rests in a well area 14 that is the bottom of the reservoir 12.

The top 20 covers the base 10 such that the side 23 fits over the circumference of the base 10 to form a spillproof fit at the bottom of the lid 1. The lid 1 covers the container in a conventional manner, specifically the bottom part of the lid 1 fits over the circumference of the open-end of the container to form a spillproof fit. Typically the lid 1 will slightly flex radially outward in order to fit over the circumference of the container in order to form a tight and spillproof fit that prevents fluid from escaping at the point of connection between the container and the lid 1. In an alternative embodiment, the top 20 and base 10 can fit together and over the container by means of threading or other generally known removable connection means.

The base 10 is comprised of an inner spout 11 through which the bulk fluid in the container can flow into the reservoir 12, where the portion of the bulk fluid can collect for enhanced cooling. Furthermore, the base 10 includes a slope 13 which, upon the container standing vertical, directs much of the fluid entering the inner spout 11 toward the bottom of the reservoir 12 or a well area 14. Some of the bulk fluid typically returns to the container through the inner spout 11.

The top 20 is comprised of an outer spout 21 from which a user can direct fluid out of the lid 1 and to the user for consumption. Additionally, the top 20 contains a dome 22 which adds more volume to the reservoir 12 and allows more fluid to collect in the reservoir 12. The dome 22 refers to any raised area of the top 20, but preferably the dome 22 is a hemisphere. Also, the top 20 prevents spillage of bulk fluid as the container is tipped to collect bulk fluid in the reservoir 12. Once the portion of the bulk fluid is collected in the reservoir 12 and allowed to cool to a drinkable temperature over a relatively short period of time, the container can then be tipped by the user to allow the cooled portion of the bulk fluid to flow out the outer spout 21 and into the user's mouth for consumption.

Additionally, the top 20 includes an outer lip 24 to provide a physical clue to the spot where the outer spout 21 is situated. The outer lip 24 can also act to help prevent accidental runoff of fluid as the container and lid 1 is tipped in unison. Also, the top 20 contains an outer trough 25 which is a depressed region of the top 20 located just radially inward from the outer spout 21. The outer trough 25 can retain any unconsumed fluid which does not fall back into the lid 1. This also prevents any unwanted runoff of liquid, or spillage.

The present invention works by placing the lid 1 over the container to form a spillproof fit. The container having lid 1 attached is then tipped such that the bulk fluid in the container flows into the reservoir 12 through the inner spout 11. This is done by tipping the container away from the user while the outer spout 21 faces the user, i.e., the top of the container is tipped away from the user. Then the container having lid 1 attached is returned to the vertical or upright position, which allows some bulk fluid, or "a portion of bulk fluid," to collect in the reservoir 12, particularly in the well area 14. Specifically, the portion of the bulk fluid collected is directed toward the well area 14 by the slope 13 as gravity draws the portion of the bulk fluid downward. Once collected in the reservoir 12, the portion of the bulk fluid can cool quicker than the bulk fluid in the container. After a relatively short period of time, the cooled portion of the bulk fluid can then be delivered to the user for consumption by tipping the container with lid 1 attached such that the outer spout 21 tips downward into the user's mouth. The term "relatively short period of time" is used herein to refer to a short time period required to allow the portion of bulk fluid to cool to a drinkable temperature. Typically the relatively short period of time will be under 2-3 minutes and more preferably under 1 minute.

After a considerable amount of time has passed and the bulk fluid remaining within the container has cooled to non-scalding temperature, the top 20 can be removed from the base 10. The considerable amount of time is significantly greater than the relatively short period of time. More specifically, it is the amount of time required for enough heat to dissipate from the bulk fluid so that the bulk fluid can be consumed without scalding the user. This period of time depends upon the amount of bulk fluid remaining in the container and the amount of thermoresistance exhibited by the container.

Generally the considerable amount of time is greater than 10 minutes. Fig. 3 shows the base 10 exposed to the environment. A user can now consume bulk fluid through the inner spout 11, versus the outer spout 21 when the lid 1 included the top 20. Once the top 20 is removed, the user can tip the container with base 10 attached towards the user with the inner spout 11 facing the user to dispense the bulk fluid to the user through the inner spout 11.

Fig. 3 shows a base 10 comprised of an inner lip 15 and an inner trough 16. These provide the same function as the outer lip 24 and outer trough 25 but with respect to the base10 and consumption from the base 10 (when top 20 has been removed). The inner lip 15 is adjacent to and radially outward from the inner spout 11. The inner trough is generally opposite from the inner spout 11 and is situated near the radial edge of the base 10. This allows any excess bulk fluid that is not consumed and not returned to the container to flow down the slope 13 and collect in the inner trough 16 without spilling over the edge of the base 10.

Fig. 6 shows another preferred embodiment of the invention consisting of lid 100, including a top 120 rotatably connected atop a base 110. The rotatable connection is either semi-permanent or a removable connection. Particularly, the rotatable connection can be a snap fit, screw fit, or a lock fit, among other known connections. Preferably, a lock fit is used to connect the top 120 to the base 110. The lock fit is similar to that widely use in pill containers, which often include arrows on the exterior of the cap and container that can be aligned to signify the position in which the cap can be released from the container or snapped onto the container. The lid 100 is physically connected to a container in a manner that is generally well known in the art.

In an initial position, where the top 120 is rotated relative to the base 110 so that the outer spout 122 and inner spout 111 are about 180° from one another, bulk fluid is directed to a reservoir 112 by first tipping the container plus lid 100 away from the user (the top tilts away from user) so that bulk fluid passes through an inner spout 111 and into the reservoir 112. The inner spout 111 is raised. Once a portion of the bulk fluid rests in a well area 114 of the reservoir 112 and is allowed to cool over a relatively short period of time, or when the portion of bulk fluid is at a drinkable temperature, the user can then drink the portion of bulk fluid by a second tipping of the container and lid 100 towards the user. The second tipping causes the portion of bulk fluid to flow though an outer spout 121 and into the user's mouth without scalding the user.

Once the bulk fluid is cooled to a drinkable temperature, the bulk fluid can be dispensed directly to the user. The bulk fluid achieves a drinkable temperature generally after a considerable amount of time from the moment bulk fluid, which typically is at a scalding temperature, is dispensed into the container. Direct dispensing is accomplished by rotating the top 120 relative to the base 110 so that the inner spout 111 aligns directly on top of outer spout 121. The outer spout 121 has an outer spout base 122 that fits over the inner spout 111 to form a fluid connection, preferably in a spillproof manner. This provides a direct channel in which bulk fluid can flow from the container through the lid 100 and to the user's mouth in a single tipping action.

Typically this embodiment, as shown in Fig. 6, is more difficult and expensive to produce and is contemplated for use with permanent containers or mugs. On the other hand, an embodiment that consists of the removable top is contemplated for use with

disposable and inexpensive containers such as those commonly sold in stores that sell coffee to go.

The foregoing represents preferred embodiments of the present invention and is not intended to limit the scope of the invention.

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ABSTRACT

The present invention relates to a container lid for sealing a container used to hold fluids and providing a reservoir for collecting a portion of bulk fluid contained in the container to speed cooling relative to the bulk liquid.

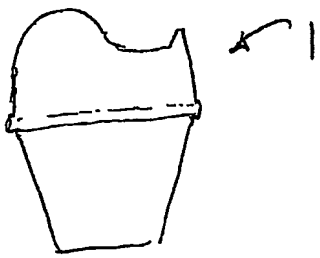

Fig. 1

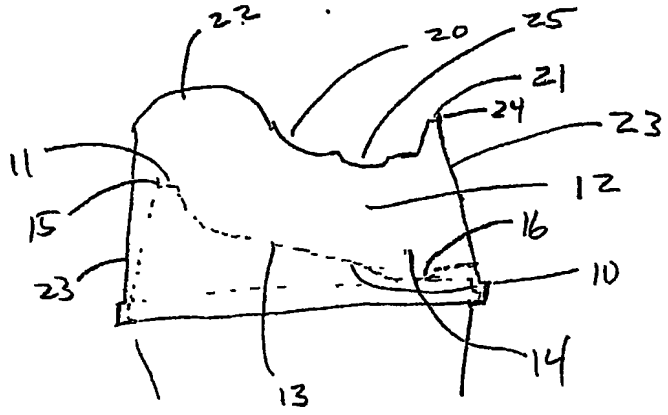

Fig. 2

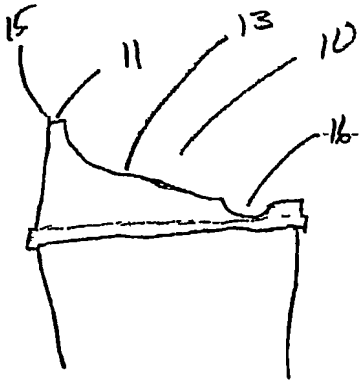

Fig. 3

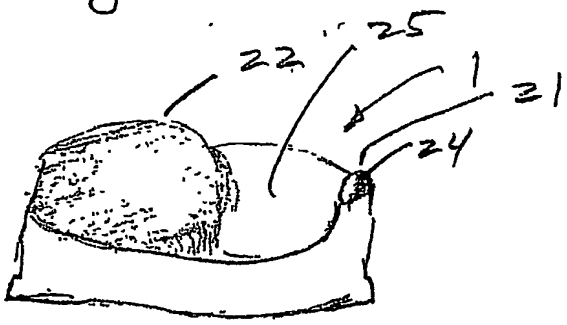

Fig. 4

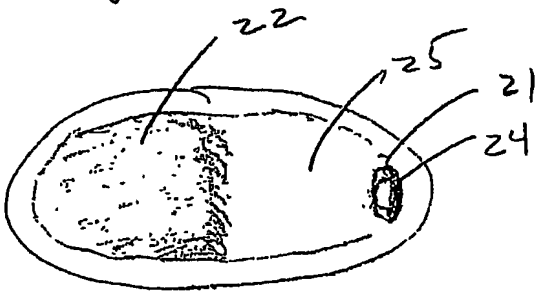

Fig. 5

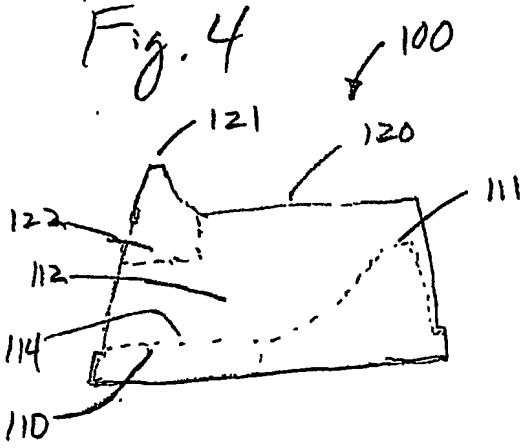

Fig. 6

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